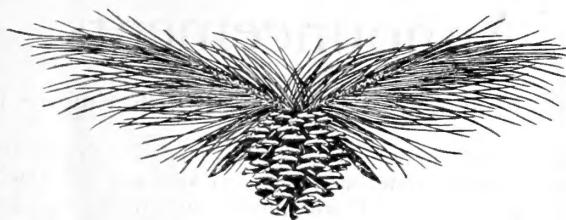


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FOREST WORKER



May, 1927

Published bimonthly by the FOREST SERVICE
UNITED STATES DEPARTMENT OF AGRICULTURE

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Announcements

Commercial Forestry Conference

A conference on commercial forestry is to be held by the United States Chamber of Commerce October 18, 19, and 20 of this year, probably in St. Louis. It will be attended by representatives of the wood-using industries and of chambers of commerce and trade organizations throughout the country.

Old Timers' Reunion at Bessey Nursery

The twenty-fifth anniversary of the establishment of the Nebraska National Forest and the Bessey Forest Nursery is to be celebrated at Halsey, Nebr., June 4 and 5. Men who were connected with the forest and the nursery in the early days will hold a reunion, and will be joined by others who have been interested in the development there of the first continuous planting project ever started on the national forests.

Forester Wanted for Boys' Camp

A forester qualified to teach forestry and nature study in a boys' camp is needed this summer by the C. E. Cobb Camps, Denmark, Me. One or two assistants with forestry training may also be needed to act as counsellors.

British Empire Forestry Congress

The next British Empire forestry congress is to be held in Australia and New Zealand in 1928. The committee on arrangements has suggested the attendance of some 32 members from parts of the Empire other than the two commonwealths directly concerned. Features of general interest will be discussions of the Imperial timber supply and consumption, research in silviculture and products, forest management, and the formation of an Imperial forestry bureau to serve as a general clearing house for information.

Journal of Forestry to Omit Current Literature Section

The section on "current literature" in the *Journal of Forestry* is discontinued, beginning with the May issue, because the cost of printing has been found to be disproportionate with the number of readers interested. Hereafter this list will be distributed in mimeographed form by the Forest Service. Copies will be sent regularly to those asking to have their names placed on the mailing list.

Because the edition of this periodical is necessarily limited, its free distribution outside of the Government service is restricted to such persons and organizations as State forestry and conservation officials, State agricultural extension directors, faculties and libraries of forest schools, and forestry associations. Others desiring to obtain copies of the *Forest Worker* can do so by sending 5 cents for a single copy or 25 cents for a year's subscription to the Superintendent of Documents, Government Printing Office, Washington, D. C. Foreign subscriptions: Yearly, 35 cents; single copies, 7 cents.

Material offered for publication in the *Forest Worker* should be addressed to the Editor, U. S. Forest Service, Washington, D. C.

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Washington, D. C.

MAY, 1927

Vol. 3, No. 3

State Forestry

Legislative Developments

Delaware.—A State forestry department is to be created in Delaware, under the provisions of an act approved April 25. A nonsalaried State forestry commission of four members is to be appointed by the governor for terms of 2, 4, 6, and 8 years, respectively, the full term of members appointed after the commission is established being set at 8 years. The commission is to employ a technically trained State forester, who will hold office at its pleasure and at a salary fixed by it. Financial support of the State forestry department is authorized to the extent of \$5,000 a year.

The State forester is to "devise and promulgate, with the approval of the commission, rules and regulations for the enforcement of the State forestry laws and for the protection of forest lands; direct the improvement of State forest lands; collect data relative to forest conditions and become familiar with and inquire into the locations of all timber land and cut-over lands and prepare maps showing the locations and areas of State forests and privately owned forests, so far as available funds will permit; take such action as is authorized by law to prevent and suppress forest, brush, and grass fires; enforce all laws pertaining to forest and brush-covered lands and assist in the prosecution, in the name of the State, of violations of said laws; cooperate with the land owners, counties, and others in forest production and reforestation; and publish such information on forestry as he deems conducive to promoting the objects of this act. He shall act as secretary of the State forestry commission and prepare annually a report to the commission on the progress and conditions of the work of the State forestry department, giving recommendations for improving matters of forest production, management, reproduction, and utilization within the State of Delaware."

The law provides for cooperation with the United States Government under the Clarke-McNary Act, and authorizes the State forestry department to enter into cooperative agreements with private agencies for the prevention and suppression of forest fires. It authorizes the department to produce forest planting

stock and to distribute it at the cost of production, packing, and transportation. It also provides penalties for injury to or removal of trees and shrubs growing upon the land of another without the owner's written consent.

South Carolina.—A forestry bill has passed both houses of the Legislature of South Carolina and has been approved by the governor. This measure provides for the creation of a State forestry commission and for the employment of a State forester. It carries no appropriation.

Minnesota.—Under a new law of Minnesota, an owner of land suitable for forest purposes may have it listed as an "auxiliary State forest" and enter into a contract with the State whereby the land while undergoing reforestation will be taxed at 8 per cent of one-third of its true valuation. The owner's plan of silvicultural treatment must be approved by the commissioner of forestry. The maximum contract period is 50 years, but contracts may be renewed. Commercial forests being developed under reforestation contracts will be subject to an additional tax of 3 cents an acre for fire protection purposes. When the timber is cut a yield tax of 10 per cent will become due.

Other acts of the Minnesota Legislature recently approved set aside as a State forest 80,000 acres of State land within the limits of the Minnesota National Forest; direct the commissioner of forestry to classify and list all State-owned lands suitable for reforestation; and create an interim commission of 13 members to study the question of restoration, delinquent real estate taxes, and finances of counties and taxing districts in the forest areas of the State and report recommendations to the next legislature.

Utah.—Utah has taken a step toward developing an organization for handling forest fires, in an act signed by Governor Dern on March 14. This act authorizes the boards of county commissioners to designate as fire districts all or any parts of the watersheds within their respective counties, directing that notice be given by publication of the creation of such fire districts. Any fire within such a fire district that burns growing trees, shrubs, brush, grass, undergrowth, or cultivated crops without adequate and proper precautions having

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been taken to prevent its spread is declared a public nuisance. Any person responsible for the starting or the existence of such a fire is required to make an effort to control or extinguish it immediately. If he does not so control or extinguish the fire, the sheriff of the county or any of his deputies, or such other officer or officers as the county commissioners may designate, are directed to do so, employing such persons and means as seem expedient and necessary. The person responsible for the starting or existence of the fire is made liable to the county for the expense incurred by the county in extinguishing or controlling it. The act defines as a misdemeanor the negligent or willful setting on fire, causing or procuring to be set on fire, or exposing to danger of destruction by fire, of any growing trees, shrubs, brush, grass, undergrowth, or cultivated crops, on any lands not one's own property.

Montana.—An act of the Legislature of Montana approved in March declares any uncontrolled or spreading fire in forest material between May 1 and September 30 a public nuisance, and holds the owner of the property on which such fire exists or from which it spreads responsible for controlling and extinguishing it. If the owner does not make a reasonable effort to do this the State forester, the United States, or any forest protective association recognized by the State forester may proceed to control or extinguish the fire and collect the costs from the owner. An owner listing his lands with a forest protective association or with the State forester or the United States Forest Service is considered to have taken reasonable steps to control and extinguish fires.

A permit is required for the burning of any forest material during the period May 1—September 30, and in addition it is required that anyone setting a fire in that period provide himself in advance with fire-fighting equipment and tools, take reasonable precautions, and watch the fire until it is out. Violation of these provisions is made punishable by a fine of from \$25 to \$500 or by imprisonment of from 10 to 90 days, or both. The State forester or any State forest officer may refuse or revoke a permit at his discretion, and the governor upon the advice of the State forester may suspend any or all permits.

Anyone clearing right of way for any railroad, highway, trail, etc., is required to pile and burn all slashings unless exempted by the State forester. Neglect to do this is a misdemeanor punishable by a fine of from \$100 to \$1,000, and in addition an offender may be enjoined from proceeding with the work of clearing.

In connection with timber cutting it is required that slash be disposed of to the extent and in the manner required by the State forester, with the provision that expenditures need not exceed 15 cents per thousand board feet of merchantable timber cut. In the event of failure to remove slash the State forester may have it removed and collect the cost of removal, up to the same limit plus 10 per cent.

A further provision of the act permits the State board of land commissioners in its discretion to list any of the State's forest lands with any qualified timber protective agency.

California.—A recently enacted law of California calls for the creation of a department of natural resources, headed by a director of natural resources, which will take over the duties of the mining bureau, department of petroleum and gas, board of forestry, Redwood Park Commission, and other organizations of the State government. The new department will consist of divisions of mines and mining, forestry, parks, and fish and game. The division of forestry will have at its head a technically trained State forester nominated by a State board of forestry consisting of seven members appointed by the governor. Of this board one member shall be familiar with the pine-timber industry, one with the redwood industry, one with the livestock industry, and one with the problems of water conservation.

Nevada.—An act of the Legislature of Nevada, approved in March, authorizes sheriffs and their deputies, fire wardens, other peace officers, and any national forest officer to call upon able-bodied men within the State between the ages of 16 and 50 years for assistance in extinguishing timber or brush fires. No one is to be required to fight fire for a total of more than five days during any one year. Men drafted to fight fire are to be compensated at a rate fixed by the board of county commissioners. Refusal to obey the summons is made a misdemeanor punishable by a fine of from \$15 to \$50 or imprisonment in a county jail for from 10 to 30 days, or both fine and imprisonment.

This act authorizes the board of county commissioners of any county to employ one or more fire wardens, who are to be compensated for time actually spent in fire fighting at a rate to be set by the board of commissioners. The fire warden is to be under the direct control of the sheriff. If the area to be protected lies near to or within a national forest, he may be placed under the direction of the forest supervisor.

New Hampshire.—The forest fire statutes of New Hampshire have recently been amended so that any person causing or kindling a fire without suitable permission is liable to the town for any expense incurred in attending or extinguishing the fire. This is in addition to the provisions of law previously in effect making such a person liable to fine or imprisonment and damages. It is required that before a fire is built on private land belonging to another permission be obtained from the owner, agent, or caretaker; and that except when the ground is covered with snow no fires be kindled in or near woodlands where they may communicate with woodlands, without the written permission of the forest fire warden. The warden's permission is not required for building camp or cooking fires if the landowner's permission has been obtained

and city or town regulations require no other permit; but these fires may be kindled only at suitable times and in suitable places where they will not endanger woodlands, may be ordered extinguished by the warden if he deems them contrary to this provision, and must be totally extinguished before being left.

Violation of this law is punishable by a fine of not more than \$500 and imprisonment of not more than one year, or both.

New York.—A resolution introduced in the New York Legislature by Senator George L. Thompson and Assemblyman Clarence L. Fisher seeks to amend the State constitution so as to authorize the State, in cases of emergency, to contract debts for the purpose of suppressing forest fires. Formerly, under section 53 of the conservation law, if the conservation department certified that available funds were inadequate for protecting the forests from fire the State comptroller was authorized, subject to the governor's approval, to make a temporary loan to the department for that purpose. A recent opinion of the attorney general held this law to be unconstitutional. Since then the legislature has found it necessary to appropriate annually for forest fire suppression more money than is needed in the average year, and there has been no provision for obtaining additional funds for this purpose in the intervals between legislative sessions.

Crown Point and Ticonderoga, Essex County, N. Y., have been added to the list of Adirondack "fire towns." This brings them within the area over which the State conservation department exercises authority with regard to forest fire protection. Both towns include land owned by the State as part of the forest preserve.

New Jersey.—The New Jersey Board of Conservation and Development under recent legislation is empowered to create special fire districts, which may include one or more townships or parts thereof, and to appoint fire wardens for service in these districts. All fire-fighting costs incurred by these wardens and their assistants in such districts are to be borne by the State. This makes it possible for the board to supplement the township and district fire organizations where they are inadequate. These organizations are supported one-half by the State and one-half locally.

North Carolina.—The forest protection laws of North Carolina have been so amended that forest officers may now require a citizen to assist in fighting a forest fire outside the township in which he lives.

A \$2,000,000 bond issue has been authorized by the General Assembly of North Carolina to make possible the establishment of a national park in the Great Smoky Mountains.

Tennessee.—A bond issue of \$1,500,000 to make possible the establishment of a national park in the Great Smoky Mountains is authorized by a recent act of the Legislature of Tennessee.

Vermont.—Vermont has appropriated \$24,500 a year for general forestry and \$8,000 a year for State forest purchase and reforestation in each of the next

two fiscal years. These amounts represent increases of \$2,000 and \$6,000, respectively. A resolution adopted by the Vermont Legislature provides for a commission of conservation and development, which is to study the State's forestry and game situation and work out a policy for its scenic and recreational development. The five members will include the commissioner of forestry, the fish and game commissioner, and three persons to be appointed by the governor.

Indiana.—Taxpayers of Indiana are hereafter to pay 1 mill a year on each \$100 worth of taxable property for State forestry purposes. The levy was previously one-half mill.

New Mexico.—The constitution of New Mexico has been amended so as to permit of the exchange of State land in national forests for Federal land.

Town Forests in Massachusetts

Seventy-eight Massachusetts cities and towns, or more than one-fifth of all in the State, have voted to establish municipal forests. The land dedicated to this purpose amounts to nearly 10,000 acres. Most of these towns were able to establish forests without making special purchases of land: About 25 per cent of them are using land contained in their poor farms; 25 per cent more received land for forestry purposes by gift; and from 10 to 15 per cent have applied forestry management to town-owned watersheds. Thus the amounts that the towns have been obliged to appropriate in making themselves forest owners total only \$76,000.

Into the development of these 78 community forests has gone the planting of more than 1,250,000 trees. For several years the Massachusetts Forestry Association has been offering to plant 5,000 trees without charge for any town in the State establishing a forest of 100 acres or more, and 29 towns have accepted this assistance.

In encouraging a town to possess itself of a forest, the Massachusetts Forestry Association usually begins by suggesting to the selectmen that it be put to a vote in town meeting whether a committee shall be appointed to investigate the possibility of establishing a town forest. When an investigative committee is appointed the association urges it first to find out whether the town already owns any land, such as a watershed, a poor farm, a wild park, or tax land, that can be adapted to the purposes of a town forest. If no such land is discovered the committee is advised to determine whether any local citizen is willing to donate land of suitable type. The next recourse suggested is an appeal to private citizens for funds for the purchase of land, and as a last resort an effort is made to have public funds appropriated.

Though the general plan is based on the New England form of town government, it might be applied almost anywhere.

Unusual Town Forestry Work of Richmond, N. H.

The town of Richmond, N. H., this spring has made a remarkable offer to nonresident owners of land within its boundaries whereby they can have their land reforested with no trouble to themselves and at cost. At the request of an owner to the selectmen his land is inspected, and if it is found suitable for reforestation the selectmen proceed to plant it. When the work is completed the owner receives a bill covering the bare cost of planting stock and labor. A fund of \$500 was set aside by the town to finance this plan.

Ralph L. Morgan, of Richmond, is doing a very distinctive piece of work in the effort to transmit to his townsfolk his own enthusiasm for forest planting. This winter he published a series of very attractive illustrated leaflets presenting the local possibilities for profitable forestry. The climax of his arguments was the offer to furnish planting stock from his private nursery, free of charge, to any resident of Richmond or any nonresident owning property in Tully Valley north of the Massachusetts line. In Mr. Morgan's nursery, begun in 1924, more than 300,000 3-year-old transplants of red and Scotch pine, spruce, and white pine have been prepared for planting this spring.

Town forests in New Hampshire now number 61 and have a total area of 11,643 acres and an estimated value of \$328,000. Some towns have retained their forest lands from the charter; Newington, for instance, has held title to its lands since 1710. This spring three towns accepted gifts of land for town forests, three others made appropriations for town forest purposes, and eight appointed committees to investigate the matter of acquiring forests.

First-Year Results of Cape Cod Experiment

The Cape Cod experiment in fire protection through public education and patrol has had a distinctly successful first year, according to Wm. A. L. Bazeley, Massachusetts commissioner of conservation. The number of forest and grass fires that occurred on the cape during 1926 was in fact 138 as compared with an average of 73 for the preceding three years; but this increase was due largely to land-clearing operations connected with a boom in Cape Cod real estate, which brought in great numbers of strangers unfamiliar with the unusual fire hazard on the cape. In area burned over the gains for fire protection are clearly shown; during the period 1923-1925, fires had covered an average of 9,363 acres a year, but in 1926 the area burned over was only 3,771 acres. During the earlier years the cost of fire suppression averaged \$9,829, and in 1926 the combined cost of educational work, patrol, and suppression was only \$12,452. Thus through an expenditure of one-fourth more the area

burned over was reduced to two-fifths of the average, and this in a year of exceptionally bad fire conditions.

The campaign on Cape Cod was undertaken by the Massachusetts Forestry Association with the cooperation of the Massachusetts Department of Conservation, the United States Forest Service, and the forest wardens of the six towns of Cape Cod. At the beginning of 1926 Arthur M. Cook, forester of the association, made a three months' speaking tour of the cape. Mr. Cook went before all the schools, clubs, boards of trade, and similar organizations, taking with him fire-prevention films and bulletins. The local press, railroads, electric-power companies, and manufacturers joined in the campaign. As one result of the educational work 120 miles of old public and logging roads were brushed out, at the joint expense of the Massachusetts Forestry Association and the towns. Two men familiar with the district were placed on duty as forest rangers, each equipped with a small truck fitted for fire fighting; and throughout the fire season these men patrolled the roads of the cape, kept camp and picnic grounds and town dumps under inspection, supervised brush burning, distributed printed matter, reported fires and their causes, suppressed small fires, and kept the subject of fire prevention constantly before the public.

County Forestry in Los Angeles in 1926

The Los Angeles County Forestry Department in 1926 collected more than 1,000 pounds of tree seed, principally of big cone spruce and California walnut, and more than 8,000 pounds of chaparral seed, most of which was of wild cherry. In the Altadena nursery there were growing during the year 860,708 trees, of which 841,659 were Coulter pine. Other species raised included eucalyptus, and torrey and digger pines. An additional 17,000 trees were being raised on Grizzly Flats, close to the place where plantings are to be made. A definite campaign was continued during the year to free some of the trees in and around the forest parks of Los Angeles from mistletoe, 351 trees being treated or cut down. Firebreaks with a total length of 43 miles were built, in 14 different projects, and an approximately equal mileage of old firebreaks was cleaned. During the year 159 miles of roadsides were cleared of grass and inflammable débris. Other work done and supervised by the department included the planting and trimming of thousands of roadside trees and the clearing of many lots.

Georgia Landowners Organize for Fire Protection

Fifteen groups of Georgia landowners have organized within the past year to cooperate with the State in forest protection. The three largest of these timber-protective organizations are the Towns-Union, of about

200,000 acres, the only one in the northern part of the State; the Homerville, of 200,000 acres, in which Alex K. Sessions is active; and the Suanee River, of 250,000 acres, of which I. F. Eldredge is superintendent. Nearly all the members of the organizations have adopted the plan of cutting their forest land into blocks with firebreaks. Several hundred miles of firebreaks, from 10 to 100 feet in width, have been built within the year, almost entirely by the use of machinery such as tractors and plows.

Field Station for Fire Experiments in Maine

A new station for forest fire experiments is to be opened this year near either Ashland or Millinocket, in northeastern Maine, by the Maine forest service and the Northeastern Forest Experiment Station of the United States Forest Service. It will have a staff of two men, and will be equipped with instruments for the determination of precipitation, air pressure, air temperature, air humidity, wind movement, evaporation, duff and soil temperature, and duff moisture. The effect of weather conditions on the inflammability of various forest fuels will be studied with the object of determining what danger of fire is brought about in different forest types, and in different conditions in these types, and in different conditions in these types, by any given combination of meteorological factors. Other studies will be made in an effort to determine the relative dangerousness, in different forest types and conditions and in different kinds of weather, of various firebrands from cigarette stubs to camp fires.

Quarantine Against Ribes

A quarantine for the protection of white pine against blister rust was declared February 15 by Conservation Commissioner Alexander Macdonald, of New York. The order forbids the bringing in, planting, possession, or propagation of any species of currants and gooseberries, including flowering currants. It applies to the Adirondack and Catskill parks and to other specified areas where protective measures against blister rust have already been put into effect or are to be applied. The violation of the order is made a misdemeanor.

Vermont Farmers Get Low Prices for Christmas Trees

About 2,000,000 Christmas trees were shipped from Vermont in 1925 and an equal number in 1926, according to estimates of the Vermont Forest Service. The Vermont farmers who raised these trees, cut them, and delivered them at the railroad siding received an average price of 25 cents a bundle (one to six trees, accord-

ing to size) for trees that retailed in large cities at from \$5 to \$10 a bundle. "If a farmer has a long haul to the railroad," says R. M. Ross, commissioner of forestry, "it means that he gets wages for himself and team and that is about all. In other words, he gives his trees away in order to get the job of hauling them to the railroad."

Bus Drivers Report Fires

School bus drivers of Gloucester County, Va., whose routes reach three-quarters of the county, have an agreement with Chief Warden Walker to watch for forest fires. During the dangerous fire season it is part of the routine of every school day for drivers who have seen fires to report them at the county courthouse.

The Connecticut Department of Forestry has an arrangement with the New England Transportation Co. whereby the company's bus drivers are instructed to watch for forest fires and when they see fires to report them to the department at once. This means that 500 miles of territory are patrolled every day of the week. The New England Telephone Co. has agreed to put through the drivers' fire reports without charge to the State.



At town meetings held in March, 4 Vermont towns authorized the establishment of town forests, 5 provided for additional plantings on forests already established, and 3 appointed town forest committees. Plantings on the forests of 17 municipalities of the State this year are expected to total 267,000 trees.



The Texas Forest Service has placed under administration the State forest near Conroe, Montgomery County. This forest, containing 1,633 acres, was cut over a few years ago, but enough seed trees of loblolly pine remain to reforest it naturally. It is planned to use this area to demonstrate woods management to farmers and other timberland owners. Only such measures will be adopted as can be put into practice by the private owner. The area will also be used for forestry experiments.



The Texas Forest Service recently completed on the State forest near Kirbyville what is "probably the first commercial planting of pine seedlings in Texas." The plantation includes 56 acres of longleaf pine, 5 acres of loblolly pine, 1 acre of shortleaf pine, 3 acres of slash pine, and 1 acre of redwood. One-year-old seedlings were used. The pines had been grown in the State forest nursery, and the redwoods were obtained from the Pacific Coast Lumber Co. of California.

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Georgia's first State forest has just been established on 16 acres of virgin hardwood forest land in Union County, on the Blue Ridge Mountain divide. The tract was given to the State by the Pfister & Vogel Land Co.



The woods of Massachusetts were closed on April 14, by order of the governor, to all persons other than owners or tenants. Another measure made necessary by the bad spring fires was the postponing of the opening of the trout season.



More than 1,000,000 Maine Christmas trees were shipped over the Maine Central Railroad this season, according to George H. Eaton, freight traffic manager. These shipments represented the high record since 1920. Christmas greens from Maine went to points as far distant as Milwaukee, Wis., and Jacksonville, Fla.

Seventy-nine employees of lumber companies are serving as fire wardens in Texas, under instructions from both their employers and the State forest service.



Forest fires caused less destruction in Pennsylvania in the fall of 1926 than in any other fall season for which the State forestry organization has records. Only 118 fires were reported after June 1, and these burned an average of only 8.7 acres each. The nearest approach to this record was made in 1919, when 122 fires burned an average of 100 acres each.



Less than 6 per cent of the forest land of Alabama was burned over in 1926, the State commission of forestry says. Studies made by the commission indicate that before it began its forest protection work in 1924, about 36 per cent of the State's forest land was burned over annually.

Education and Extension

A Year of Forestry Extension Work

Results of forestry extension work in 1926, the first full calendar year of this work under the provisions of the Clarke-McNary Act, have been summarized by the Extension Service, United States Department of Agriculture, from the reports of county agents. The reports show that improved forestry practices were adopted during the year on 10,074 farms. These improved practices included forest planting on idle lands, windbreak planting, thinning and improvement cutting in existing woods, measuring and marketing farm timber, protection of woodlands from fire, and the preservative treatment of farm timbers. Agents in more than 30 States reported the planting of forest trees on 23,422 acres of idle farm land by 3,872 owners. In addition, windbreaks were planted on 1,679 farms. The improvement of farm woods was reported for 3,412 farms and involved 111,668 acres.

Four-H Forestry

In the two years since forestry was introduced as a subject of instruction in the Four-H clubs, forestry work has been undertaken by the clubs in 19 States. The year 1925 saw the work begun by clubs in New Hampshire, Vermont, Massachusetts, New York, Pennsylvania, Maryland, Kansas, South Carolina, Alabama, Tennessee, Oklahoma, and Colorado. Clubs of Michigan, New Jersey, and Wisconsin began in 1926,

and this year's beginners are in North Carolina, Connecticut, Minnesota, and Louisiana. (Forestry work for boys similar to that of the Four-H clubs has been carried on in Louisiana since 1925 under the direction of the State forester.)

In New York State 95 boys last year completed forest planting projects assigned to them by agricultural extension agents, planting 92,000 trees. The first-year project in the New York clubs consists in planting 1,000 trees on land that is unsuited for agricultural crops and on which no forest growth is standing, protecting the plantation from damage by stock, keeping a complete record of the work, and making a report on it. In the present season 495 boys and girls in 15 counties of New York are undertaking to plant their 1,000 trees apiece.

Members of the Four-H clubs of Wisconsin are called "junior forest rangers." Four successive orders are open to them—forest crafter, forest planter, woodsman, and cruiser. Each junior forest ranger undertaking a forestry project for the first time receives a gift of 300 coniferous seedlings from the Wisconsin Conservation Commission, and each one entering upon a second-year project receives twice that number.

A four-year program worked out by Extension Forester D. B. Demeritt for the Four-H clubs of Louisiana, which will be undertaken this year in six or seven parishes, devotes one year each to (1) tree identification, and thinning for pulpwood and posts; (2) seed collection and thinning; (3) planting; and (4)

timber estimating. In order to market the products of the thinnings, cooperation has already been arranged with leading lumber companies of the State.

New Hampshire clubs, with a membership of 40, last year planted 58,400 seedlings and improved 81 acres of woodland. The club formed last year in Warren County, N. J., required of each applicant for membership that he obtain the loan of at least 1 acre of abandoned or low-production farm land. Each member planted his acre with pine and spruce, the latter to serve as fillers for a few years and then to be removed for Christmas trees. In Tennessee the requirement for admission was to gather, dry, and store a peck of black locust seeds in preparation for this spring's planting. In Orleans County, Vt., a club of 10 girls whom E. L. Ingalls, the State club leader, has been instructing in woodcraft, have procured a piece of land and begun to reforest it.

Extension Forestry in Pennsylvania in 1926

Extension Foresters C. R. Anderson and Frank Murphey, of Pennsylvania, last year conducted 93 planting demonstrations. These plantings are designated by large signs naming the species and giving the dates of planting. Added to those of the preceding two years they make 240 "result demonstrations" of planting established by the extension service in Pennsylvania. In addition, 26 meetings were held during the year for the discussion of forest planting, with an attendance of 1,904.

Work with farm woods was conducted in 23 counties and established 50 permanent result demonstrations, which like the plantings are marked so that passers-by on the highway may understand what has been done. Some of the 72 farmers who were given assistance with their woodland improvement problems reported that as a result they were able to increase their returns \$20 to \$25 an acre or more.

Marketing and estimating were demonstrated 14 times. The cruising stick distributed by the Federal Land Bank of Springfield, Mass., was shown to the 147 farmers attending, and sold to 40.

Harvard Saves a Block of Old White Pines

Twenty acres of old-growth white pine and hemlock on Mount Pisgah, in the town of Richmond, N. H., has been purchased by subscription for Harvard University and will be kept in its natural state. The bit of primeval forest of which this tract is a part is almost the last remaining in New England. Dr. John C. Phillips, of Boston, took the initiative in collecting the money necessary for the purchase, about \$1,000 an acre, and was assisted by Prof. Richard Fisher, of Harvard. The tract will be used for research by students not only from the Harvard Forest at Peter-

sham, Mass., but also from the Yale Demonstration and Research Forest at Keene, N. H. It will continue to be accessible by trail only.

A Forestry Missionary to Summer Camps

William Harlow, of the faculty of the New York State College of Forestry, will spend the summer visiting children's camps as a representative of the Society for the Protection of New Hampshire Forests. Mr. Harlow will go to both private and public camps. In each camp where room is found on the schedule for forestry work he will spend two or three days, presenting a plan of forestry teaching adapted to children of various ages and showing how it may be adjusted to the conditions of the individual camp. He will make use of colored lantern slides and photographs and will distribute printed matter.

Four-H Forestry Camp in California

A State camp for boys and girls of the Four-H clubs of California is being planned by club leaders with the help of Extension Forester Woodbridge Metcalf. The site is Whitaker's Forest, in Tulare County, between Grant Park and the Sequoia National Park. This forest includes in its 320 acres more than 200 large *Sequoia Washingtoniana* trees standing among young stands of yellow and sugar pine, sequoia, white fir, and incense cedar which have come in since logging. The camp buildings will be located in an old sawmill clearing of about 3 acres. As planned the camp will accommodate from 75 to 125 boys and girls at a time. Children will be sent to the camp as a reward for exceptional work in any branch of Four-H club activities, but only those who have satisfactorily completed forestry projects will be eligible to attend.

Farm Boys Demonstrate Forestry to Thousands

Two 15-year-old farm boys of Fremont County, Colo., Bill Howard and Bill Dunlap, last fall gave forestry demonstrations before audiences totaling thousands. After winning a forestry demonstration contest with other teams of Four-H club boys of their county, they were sent by the county to the State Fair at Pueblo and there in competition with two other county teams won the State championship. During the National Western Stock Show the boys were taken to Denver, through the cooperation of the Rocky Mountain Lumber Dealers' Association, the McPhee and McGinnity Lumber Co., the forestry committee of the Denver Chamber of Commerce, and the Denver & Rio Grande Western Railroad. While in Denver they appeared before the interstate meeting of the

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Rocky Mountain Lumber Dealers' Association, the district office of the United States Forest Service, the Exchange Club, the Denver Chamber of Commerce (in open meetings), and the Baker and Byers Junior High Schools. The boys' performance was a coniferous tree-planting demonstration, from the collection of cones through seed extraction to field planting.

Mississippi School to Have Demonstration Forest

The Dixie Consolidated School, on the Dixie Highway, in Forrest County, Miss., owns a tract of 40 acres of culled longleaf pine timberland. Heretofore the timber has not been protected from fire or razorback hogs and mature trees have been cut for fuel for the school. Early in April Extension Forester H. C. Mitchell, of Mississippi, County Agent W. M. Sellers, and W. R. Mattoon, of the United States Forest Service, held an evening meeting at the school, with forestry talks and films. As a result of the meeting the board of trustees have decided to protect the school lands from fire, to use dead and down trees and stumps for firewood instead of cutting valuable trees for that purpose, to fence about 15 acres as a demonstration in protection against fire and hogs, and to plant slash pine on some flat land. The character of the land and timber, the prominence of the school in the county, and the location of the tract on the Dixie Highway promise to make this one of the most interesting and valuable demonstration forests in the State.

Cornell Exhibits an Ideal Farm Woodland

A section of an ideal farm woodland was exhibited in Fernow Hall, Cornell University, during the annual farmers' week in February of this year, which had an attendance of 5,179. Typical crop species for the average central New York farm were used—hard maple, white ash, basswood, hickory, red oak, and black cherry. Trees from 3 to 16 inches in diameter were shown, as well as saplings and 2 to 3 year old seedlings. An old rail fence fronted the exhibit, calling attention to the necessity of fencing woodlands from stock. The trees were marked with numbers, and a guessing contest was arranged so that visitors might test their knowledge of local species.



A short course in the use of the portable sawmill was held at the Wisconsin College of Agriculture, Madison, Wis., during Farmers' Week, February 1-5. Mill, saws, belts, gas engine, and a sawyer were furnished by the Enterprise Co., Columbiana, Ohio. Saw manufacturing firms sent saw filers, and the Forest Products Laboratory gave advice. Announcements

were made in the press that logs would be sawed for farmers who would haul them to the college. The demonstration was attended by hundreds of farmers, and attracted so much interest that it was repeated during the annual convention of the Wisconsin Brotherhood of Threshermen, held February 16-18 with an attendance of 200.



The eighth annual short course of the New York State College of Forestry in dry kiln practice was held at Syracuse March 7-17, and was attended by men from five different States. In the ten 8-hour days of the course instruction was given in methods of piling lumber to prevent warping and twisting, and in handling problems of case hardening and testing. Studies of dry kiln operation and of kiln layouts included observation of commercial kilns at Syracuse.



The Florida Federation of Women's Clubs is working vigorously to arouse local interest in proposed State forestry legislation. During the months of February and March the federation carried out a series of 61 meetings before women's clubs, Rotary and Kiwanis clubs, schools, and colleges, at which forestry talks accompanied by films were given by Mrs. Lilian T. Conway of the United States Forest Service.



Women's clubs of Ohio are competing this spring for prizes of \$25, \$15, and \$10 offered to the three clubs that plant the largest number of trees. The donor of the prizes is Mrs. George McDonald, of Cincinnati, forestry chairman of the Ohio Federation of Women's Clubs. To stimulate interest in planting, in April Mrs. McDonald arranged a series of forestry meetings of clubs in Cincinnati and nearby towns at which Mrs. Lilian T. Conway, of the United States Forest Service, gave talks illustrated with lantern slides.



A large increase in the number of students taking forestry courses is reported by the University of California. About 300 students of the different colleges are enrolled in forestry courses in the spring term. Students majoring in forestry number 65, including 11 graduate students.



Planting demonstrations conducted by Extension Forester F. W. Dean, of Ohio, in 1926 required 353,700 trees and were attended by 533 people. Three meetings for the discussion of forest planting were attended by 130 people.

The summer camp of the Yale Forest School is to be transferred this year to the Yale engineering camp at East Lyme, Conn. There the university owns an excellent forest tract of 2,000 acres and fully equipped camp buildings. The former location of the school's summer camp, on the property of the Pinchot family at Milford, Pa., has become unsuitable because of the cutting off of woodlands near Milford which were formerly used in the work of forest mensuration.



Every student of the New York State College of Forestry, Syracuse University, has agreed to contribute \$1 a year to a fund from which loans may be made to students in straitened circumstances to enable them to complete their course. The fund will be controlled by Dean Franklin Moon.



Boys of the Sturgis Junior High School of San Bernardino, Calif., have organized a forestry club, under the leadership of County Forester Tuttle and Assistant Farm Advisor Campbell. The boys hold monthly meetings for discussion of forestry topics, make field trips with Mr. Tuttle, and raise and plant trees.

An engineers' loan fund has been created at the University of Washington. Loans are made without security to technology students, including forestry students, who have shown industry and application in their school work and who are in need of temporary financial help to complete the work of any quarter.



A research club in the plant sciences was organized last fall in Yale University under the leadership of Professor Toumey. The club is composed of faculty members and graduate students who have done or are doing investigative work and includes botanists, entomologists, foresters, chemists, geneticists, and biologists.



Correction: The 10 agricultural high schools in Mississippi mentioned in the March Forest Worker as having introduced forestry courses and acquired demonstration plots are not all located in Simpson County but are scattered through the State.

Forest Service Notes

Those Alaskan Sales

By E. E. CARTER, U. S. Forest Service

Two sales of pulp wood on the Tongass Forest, Alaska, each for 835,000,000 cubic feet, have been advertised, bid for, and finally awarded to thoroughly responsible bidders. Each award is accompanied by a recommendation to the Federal Power Commission that a permit for the development of specific water powers be granted to the timber purchaser, in preference to other applications. The sale in the south end of the forest, commonly referred to as the Ketchikan unit, was awarded to I. and J. D. Zellerbach, of San Francisco, officers of the paper manufacturing and wholesaling corporation which bears the family name. They produce newsprint at Port Angeles, Wash., from the same species of trees that grow in Alaska. After careful study, they concluded that Alaska offers the best opportunities for an expansion of their newsprint production. The Juneau unit, in the north end of the forest, was bid in by George T. Cameron, president of the San Francisco Chronicle, who will have associated with him Harry Chandler, owner of the Los Angeles Times. These newspapers are using about 60,000 tons of paper annually, and the enterprise has an assured market for the greater part of the product of their mill.

Thus the vision of many men of the Forest Service during the last quarter century approaches reality.

Twenty-five years ago the "Alexander Archipelago Forest Reserve" was proclaimed and Supervisor Langille saw future pulp and paper mills. After the Forest Service and the enlarged Tongass Forest were organized, Supervisor Weigle had the vision more clearly. Then came Flory and Heintzelman, Gardner and Zeller, each with paper mills before their eyes. Wyckoff, Peterson, McKechine, and other rangers made long, hard boat and trail trips to wind up automatic stream gauges in the winter and thus add to the growing mass of definite data needed to make hard-headed engineers and capitalists also see the vision. Williams and his cruising crews bucked the wet brush in season and out to prove the (to them) obvious abundance of the timber supply. Dort brought his strength of leg and strength of mind and for two seasons, into the short days of November, ran his lines in the wet and cold, and reduced to definite engineering form the general knowledge of the Forest Service about the water powers of the region. Man after man stood the gaff of the hardest kind of work while wet, cold, mosquito-bitten, weary. Each saw ahead not personal riches, but a permanent paper industry, a more prosperous Alaska, and a growing rather than a storehouse forest.

Meanwhile there were discouragements. Alaska, to most people, meant bitter cold, tundra, ice, polar bears, gold rushes, Esquimaux, volcanoes, an island where seals bred, or a place from which canned salmon came

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There was no timber in Alaska. There were trees, but they were short and scrubby, undesirable for pulp-making so long as there were any trees anywhere else. Even some professional foresters viewed the prospect darkly, refusing to believe that good water powers were available, and failing to grasp the idea of cheap water transportation to the markets of the world. Paper production elsewhere would supply the world demand, and it would be a half century or more before economic conditions would justify mills in Alaska. The Forest Service men were ignorant enthusiasts, and their vision an impracticable dream.

Promoters came and saw an opportunity to use "official statements" to their own advantage whether paper production resulted or not. They demanded impossible terms, and when Graves or Greeley held true to their trust, howled about the "locked-up resources" of Alaska, and the howl was echoed from Alaskans who wanted to make a stake quickly—and leave. Their clamor was quieted by the last public speech of President Harding, after he had gone to the Territory.

Gradually the work on the ground gave definite data. Without question, the timber was there, and the cheap water power. Good engineers and timber cruisers, hired by paper manufacturers and others with capital seeking investment, checked Dort's reconnaissance of the water powers, Williams' cruises, and Heintzleman's statements, and reported them sound. The Alaska opportunity began to take higher rank in the order of assured future developments "when economic conditions permit." The half century shrank to a decade. Then Heintzleman took his data into the offices of men who could command the millions necessary before paper machines can turn in Alaska. He worked over the Forest Service contract. He sold the idea that the Alaska pulp chances were ripe, physically and economically.

And now the vision is taking on substance. It will take five years of time and many millions of dollars before either paper mill will be shipping newsprint to the presses, but the jam is broken. The bids show that, in the judgment of those best qualified to know—i. e., men already in the business on a large scale—the time has come to establish, on a permanent basis, the newsprint industry in this outlying Territory of the United States. Permanency for that industry underlies that decision. The development must not and will not be greater than can be supported by the growing power of the forest. Not timber mining, but timber growing is the foundation on which rests this expansion of the paper industry, of the prosperity of Alaska, and of the use of the present crop.

Superior National Forest Boundaries Enlarged

The way has been opened for a considerable enlargement of the Superior National Forest in Minnesota.

By Presidential proclamation the boundaries have been enlarged to include 396,000 acres. Of the area within the enlarged boundaries 10,000 acres is already in public ownership, and the National Forest Reservation Commission has authorized the purchase of such of the lands included in the new area as can be acquired at a reasonable price. Much of the area is cut-over and burned-over land originally stocked with splendid forests. It has been found unsuited to agriculture, but if properly handled and in some places planted with trees is believed capable of growing valuable new forests.

Commission Authorizes Purchase of Lands for National Forests

The purchase of lands to the value of \$572,000 as additions to the eastern national forests was authorized by the National Forest Reservation Commission on March 7. These lands consist of 69 tracts, having a total area of 96,038 acres, scattered from the White Mountains in New Hampshire to Minnesota and Arkansas. The prices approved by the commission average \$5.96 an acre.

The largest tract, one of 42,819 acres, is situated in White, Habersham, Lumpkin, Dawson, and Fannin Counties, Ga., on the eastern slope of the Blue Ridge Mountains. This in large measure rounds out the Georgia National Forest in this section and will be an important addition to lands protecting the headwaters of the Savannah and Chattahoochee Rivers. A tract of 12,372 acres covered by the authorization lies in McKean, Warren, and Elk Counties, Pa., on the watershed of the Allegheny River. Another tributary of the Ohio River, the Monongahela, is to have additional protection through the purchase of a tract of 10,336 acres in Hardy, Hampshire, and Pendleton Counties, W. Va. In Tennessee, 4,405 acres are to be acquired in Carter and Sullivan Counties, located on the headwaters of the tributaries of the Tennessee River and protecting the Muscle Shoals reservoir and dam. An area of 1,941 acres in Virginia lies chiefly on the watershed of the Potomac River. In New Hampshire it is proposed to purchase 9,541 acres as additions to the White Mountain National Forest, and in Arkansas 4,289 acres located largely on the watersheds of the White and Arkansas Rivers—affording additional protection to these highly erratic streams the waters of which have contributed much to the flood losses in that State. Smaller areas covered by the authorizations are in North and South Carolina and in Minnesota.

A New England delegation, headed by Allen Hollis of New Hampshire, appeared before the National Forest Reservation Commission at its March meeting to urge Government purchase of 22,000 acres of land on the headwaters of the Merrimac River in the town of Waterville, N. H. This tract is suggested as an ad-

dition to the White Mountain National Forest. The commission authorized the Forest Service to make an examination of this land, which is now in progress.

At its first meeting of this year, held January 8, the commission recommended that 430,457 acres of public land be added to the national forests of the West; authorized the extension of the Monongahela National Forest purchase unit, in West Virginia on the headwaters of the Potomac River, by about 80,000 acres; and authorized the purchase of lands totaling 35,334 acres as additions to the eastern national forests. The largest single purchase authorized at that time was 15,131 acres in Pennsylvania on the watershed of the Allegheny River.

Court Decision Opens Irrigation Lakes to Recreation

The decision of the United States Circuit Court of Appeals for the Eighth Circuit, on January 17, in the case of the United States *v.* The Big Horn Land & Cattle Co. puts at rest the question whether irrigation grantees for natural lakes within the national forests may exclude the public from recreational use of such lakes. For many years some uncertainty has existed as to just what rights were acquired by irrigation grantees under the act of March 3, 1891, which grants rights of way over lands of the United States, including national forests, for reservoirs, canals, etc., to be used for the main purpose of irrigation. It has become a practice of individuals and companies seeking the benefits of this act to file on small lakes, particularly within the national forests, and obtain the right to build dams at the outlets of the lakes and thereby use these natural bodies of water for storage reservoirs. In some instances the grantees have posted signs around the lakes stating that the lakes were "private property" and warning the public to "keep off." Since a great number of natural lakes within the national forests are used for irrigation and power purposes, the claim of the grantees to exclusive use of these lakes, if substantiated, would deprive the public of valuable rights in connection with fishing, boating, and other forms of recreation.

In the case mentioned it was unnecessary to decide whether the irrigation company, if it had had a right to use the lake involved in the case for storage purposes, would have had the right to exclude the public from the lake. Nevertheless the court made the following statement: "However highly prized may be the piscatorial privileges claimed by the defendant, we find nothing in the act of March 3, 1891, granting to the defendant a limited fee in the land surrounding the lake for such purposes." Thus it is understood that had it been necessary for the court to decide the question it would have held that the grantee had no right in the lake other than to store water for irrigation purposes—specifically, that it had no right to exclude

the public from fishing in the lake when the fishing would not interfere with the irrigation use which the grantee was authorized to make.

New Process Produces Cheap Print Paper from Hardwoods

A new pulping process that produces a high yield of cheap print paper from hardwoods has been developed at the Forest Products Laboratory at Madison, Wis. Hardwood chips are subjected to only a mild chemical treatment and then reduced to fiber through the use of a rod mill, a hollow horizontal steel cylinder half filled with steel or bronze rods. The substitution of the rod mill processing for a certain amount of chemical treatment brings about a high yield.

Paper of the weight and thickness of newsprint made wholly from semichemical pulp of black, tupelo, or red gum, or aspen, birch, or maple, has been found to have greater strength than commercial newsprint of the type now common. Paper equaling or excelling standard newsprint in color can be made from gums, if black and red heartwood are excluded. Pulp made by the new process from aspen and birch could be substituted for more than 50 per cent of the standard newsprint mixture of ground wood and sulphite pulp without sacrifice of quality. In fact, ground wood pulp and the new semichemical pulp can be combined without sulphite pulp, although the sheet made without sulphite is rather weak when wet.

The introduction of semichemical pulp from aspen and birch and possibly maple should assist materially in perpetuating the newsprint supply in the northern and northeastern regions. The new process offers an excellent opportunity for the development of a print paper industry in the Southern States, where there is a large supply of gum.

Friends or Enemies?

By L. J. PESSIN, U. S. Forest Service

While lifting pine seedlings recently in the nursery of the Southern Forest Experiment Station at Bogalusa, La., P. C. Wakeley and I noticed on the roots of the seedlings numerous structures which, when examined under the microscope, were found to be ectotrophic mycorrhizas. The roots were practically without root hairs. Mycorrhizas apparently occur on all four species of Southern pine.

In certain plants branches of roots may become covered with a mantle of a nongreen plant (fungus). When this happens the branches cease to grow in length and begin to swell. In the course of a few days they have become club-shaped or Y-shaped, and are what we call mycorrhizas. A mycorrhiza is a sort of union of fungus and root. Frequently the fungus mantle does not penetrate into the interior of the cells, in which

case the mycorrhiza is described as ectotrophic. As a rule root hairs, the thin and delicate structures which are usually found protruding from the surface layer of cells of roots just back of the root tip and which are the plant's principal means of absorbing water and salts, are not borne by plants possessing mycorrhizas.

Mycorrhizas were first described by Frank in a paper which appeared in 1885, and since then some 60 or 70 papers have been published from which we learn that many forest trees possess them. What effect their presence has on the life of the plant is still a puzzle. Some investigators have proved to their own satisfaction that mycorrhizas are harmful to the trees; others maintain that they are highly advantageous. It has been found that orchid seedlings can not thrive without this peculiar association of fungus and root; and it has been argued that where mycorrhizas are present on the roots of trees the fungus branches (hyphae) act as substitutes for the missing root hairs by spreading in all directions and bringing water and salts to the roots, obtaining in return certain nutriments that are stored within the roots.

Papers recently published on mycorrhizas, especially those of the past two or three years, present very contradictory opinions. Melin, of Sweden, for instance, asserts that mycorrhizas are of great help to the forest trees on which they grow, while Koki Masui, of Japan, in a paper published last year, maintains that they harm the trees.

It seems inconceivable that young seedlings the roots of which are literally covered with mycorrhizas should be able to thrive so well as some I have seen, if those mycorrhizas are really harmful.

The question as to whether mycorrhizas are friends or enemies of the forest trees, and just what influence they have on the survival of seedlings on various sites, seems to merit attention from both foresters and botanists.

Disease-resistant Yellow Pines for Nebraska

Yellow pines apparently immune to *Peridermium* were found in northern Nebraska during the past year by C. G. Bates, of the Rocky Mountain Forest Experiment Station, and seed were collected from these trees for planting this spring on the Nebraska National Forest. No evidence was found of resistance to tip-moth except through vigor that enables the tree to outgrow the injury. It is believed that this problem may be solved by the use of local seed thoroughly acclimated. For the purpose of a fuller study of hereditary tendencies and the development of a stand for very select seed production, all experimental lots on the Nebraska National Forest will hereafter be planted in a segregated area.

About 15 lots of Nebraska seed were made available for sowing in the Halsey nursery in 1927, some of them representing trees of exceptionally fine quality.

A Tolerance Test of Western Species

The ability of seedlings of the "tolerant" tree species of the West to function with light of 1 per cent of the intensity of sunlight, when all other conditions are favorable, was confirmed by the results of experiments made in the past year by C. G. Bates of the Rocky Mountain Forest Experiment Station. In these experiments, made under artificial light, redwood was found vastly more efficient in weak light than most of the species, but was followed at no great distance by Engelmann spruce and Douglas fir. The place at the foot of the list was taken by pinon, which however is able to persist in weak light because of the large store of food which the seedling derives from the seed.



A tract of 4,000 acres in the Coronado National Forest has been designated with the approval of the Secretary of Agriculture as an area to be kept in its natural condition. This area is situated near Tucson, Ariz., and the National History Society of Tucson has taken a particular interest in having it retained in its natural state.



Sixty-seven men passed this year's civil service examination for junior forester.

General Forest News

Flood-Control Plan Must Include Forestation

By E. A. SHERMAN, U. S. Forest Service

Reforestation and forest protection will unquestionably enter into any plan for the future control of the Mississippi. Claims that the present flood is due to forest destruction or claims that reforestation has no

bearing upon flood prevention are both exaggerations. Every acre of land in the immense catchment basin of the Mississippi system contributes, in one form or another, at one time or another, to the flood problem. It is idle to say the scores of millions of acres of forest land within this basin have no relation to the flood problem. The plans for preventing a recurrence of a flood of this magnitude must, as one of their essential

factors, include the reforestation of the headwaters of the Mississippi and its tributaries.

Although excessive precipitation in the main basin of the Mississippi is a major cause of the present flood, many of its tributaries have contributed their own floods. Extensive deforestation on the headwaters of innumerable feeder streams is partly responsible for rapid melting of snow and for the rapid run-off of snow water and rainfall. Deforestation, accompanied by repeated fires, has likewise encouraged erosion of the soil. These effects are particularly pronounced in hilly and mountainous country where cut-over land is not extensively reclaimed for agriculture, and where repeated fires have progressively denuded the land.

In making comprehensive plans it will be necessary, in my opinion, to consider forests as affecting run-off, snow melting, surface erosion, channel cutting, and silting. In the long run extensive reforestation, by retarding the run-off, will supplement the artificial engineering work. Every dollar expended in reforesting denuded land will return with interest through the sale of forest products and water power and the stimulation of industry. Flood prevention will come as a by-product without actual cost.

In at least one region the present flood has raised the question whether the reclamation of bottom lands has not gone too far. Efforts are now under way for a bond issue to purchase bottom lands along the Illinois River, a tributary of the Mississippi, in order that the overflow lands may be restored to their original function. Conservation agencies point out that this land has a great additional value for timber growing and game breeding, which, with reduced flood-control costs, would tend to offset the loss of agricultural value.

American Farmers' Loss Through Erosion

Rushing rainwater sweeping over the fields of the United States carries away 20 times as much plant-food material every year as is permanently removed by crops, says H. H. Bennett, of the United States Bureau of Soils. The results of Mr. Bennett's studies indicate that erosion takes \$200,000,000 out of the pockets of American farmers every year. A single county in the Piedmont region was found by actual survey to contain 90,000 acres of formerly cultivated land that has been permanently ruined by erosion. In another county in the Atlantic coastal plain 60,000 acres has been ruined. Much of this land, because of its extreme susceptibility to erosion, should never have been plowed, but should have been maintained in timber or in pasture. In addition, not less than 3,000,000 acres of good stream-bottom lands have been practically ruined for agriculture by deposition of inert sand and gravel and by increased swampliness due to channels choked with eroded soil.

"In this new country of ours," says Mr. Bennett, "we already have some good-sized monuments in the

shape of land devastation, but we are not profiting very much from such examples. Land wastage by erosion is proceeding as rapidly as it ever did, except in a few sections."

Floods Reduce Lumber Production

The Mississippi River flood, the greatest known since the development of the river, is taking its toll of the lumber industry. Many million acres of bottom-land forest have already been inundated. Of the 6,628,000,000 feet of hardwoods cut in the United States during 1925, nearly 40 per cent came from the Mississippi Valley region. Approximately half the cypress cut also came from this section. Preliminary indications are that the loss in production during the latter part of April amounted to some 6,000,000 feet daily, with prospects of this increasing as the flood moved into the lower part of the river. Lumber stocks at a number of mills have floated away and many mills will be out of commission for several months. Because the high water has in many places made the logging railroad service uncertain many of the southern pine mills are having difficulty in operating full time.

Brush and Dam for Flood Control

The flood-control dam erected by the Los Angeles County Flood Control Commission in San Dimas Canyon, Angeles National Forest, is the first of a series for the construction of which a \$40,000,000 bond issue was authorized. In one 48-hour period in April, 1926, 11 inches of rain fell in the San Dimas Canyon and 1,100 acre-feet of water was measured into the reservoir. The area of the watershed is 15 square miles. Therefore, during the 48-hour period there fell upon this watershed 8,800 acre-feet of water, of which 1,100 feet was held back by the dam and 7,700 feet by the brush in the canyon. H. S. Gilman, in charge of the dam, raised the question: If it is worth \$700,000 to have a dam that will hold back 1,100 acre-feet of flood water in a single storm, what is the value of the brush on this watershed which held back 7,700 acre-feet?

McSweeney Forest Research Bill Gets Indorsements

The McSweeney bill, which proposes to codify and round out Federal legislation on forest research and to lay down a 10-year program for development of work in this field by the Federal Government, has been indorsed in principle by Secretary Jardine, of the Department of Agriculture. The Southern Forestry Congress, at its annual meeting in March, passed a resolution

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indorsing the objects to be attained by the McSweeney bill for the recognition of forest research as an urgent national need. The natural resources production department of the United States Chamber of Commerce at the recent annual meeting of the chamber indorsed the bill in the following resolution:

Whereas it is highly important that all true forest lands be made permanently productive; and

Whereas the President of the United States and the Director of the Budget have taken a constructive interest in reforestation by efforts to strengthen the forest protective activities of the Federal Government and to promote cooperation with States and private agencies under the Clarke-McNary Act; and

Whereas the Hon. John McSweeney introduced in the second session of the Sixty-ninth Congress a bill (H. R. 17406) which would provide definite, authorized appropriations to the Department of Agriculture for promoting the full use of forest land for timber growing and other purposes, and would authorize a national survey of forest resources and timber requirements, also continue and expand research in timber growing, wood utilization, and the elimination of waste; therefore be it

Resolved, That we, the natural resources production department of the United States Chamber of Commerce, in annual convention assembled, do hereby indorse the principles laid down in the McSweeney bill; be it further

Resolved, That the several States and the Federal Government be encouraged to continue the acquisition of lands for reforestation purposes.

Southern Forestry Congress Meeting

By HERBERT A. SMITH, U. S. Forest Service

The keynote of the Southern Forestry Congress at its ninth annual session, at Jacksonville, Fla., March 22 and 23, was the necessity for more public education in forestry matters—and first of all, on the harmfulness of forest fires.

The president of the congress, H. L. Kayton, of Savannah, struck the note in his opening address when he urged the need for teaching forestry in the schools from the elementary grades up. In one way or another most of the following speakers likewise brought out the need of a better public understanding of the purposes, methods, and value of forestry as a prerequisite to widespread practice of enlightened forest management in the South.

Col. W. B. Greeley, speaking on "The development of cooperative forestry and what it means to Florida," laid particular stress on the necessity for "the creation of a forest consciousness among all ranks of people, and especially those who deal with the soil." Don P. Johnston, a former Forest Service man who is now a Florida naval stores operator, told the congress that in his judgment forestry legislation hitherto proposed in his State had failed to pass because it was too much in advance of forestry sentiment, and observed that "without public sentiment back of it legislative forestry can no more be effective than legislated morals." The resolutions adopted by the congress at its close included hearty indorsement of the educational activities that

are being fostered by National and State forestry organizations, and urged State boards of education to avail themselves of the material being put out by such organizations.

Naturally, Florida's needs came in for special attention. Colonel Greeley said: "We are here to-day to urge the remaining three of the Southern States, Florida, South Carolina, and Arkansas, to join the States which have taken this first step"—that of qualifying for Federal cooperation in fire control—"toward the protection and restoration of their forest resources." "A forestry policy for Florida" was the subject of a paper by B. F. Williamson, president of the Florida Forestry Association, and was also largely the theme of an address by Senator Fletcher that was one of the high spots of the congress. Senator Fletcher advocated educational activities to overcome indifference and "create an interest in this vital matter," tax law revision, laws to check promiscuous burning, and, most important of all, a State board of forestry authorized to employ a State forester and inaugurate systematic protection of forest lands. The congress went on record in its resolutions as believing the time opportune for Florida to take this action, and urged similar action in South Carolina, where a bill to create a State forestry department was then pending before the house, having already been passed by the senate.

Other resolutions urged enlarged public forest ownership, National, State, and municipal, with especial reference to a need for State forests in the South; pointed out the vital importance of larger provision for research and indorsed the idea of a Federal organic act for this purpose; advocated study by the States of taxation with a view to facilitating private timber growing; and expressed approval and appreciation of the work of the Forest Service under Colonel Greeley.

Col. Joseph Hyde Pratt, of Chapel Hill, N. C., to whom more than to any other one man the Southern Forestry Congress owes its existence, gave a paper on "National, State, and town forests." He held that public ownership in the East and South should be greatly increased; that ultimately public forests should approach one-half the total forest area of the country, a higher ratio of public to private ownership in the West balancing one of probably less than one-third in the eastern part of the country; and that State forests in the East and South should at least equal Federal.

"Railroads and forestry" was the subject of a paper by Roland Turner, general agricultural agent of the Southern Railway system, who made evident the very deep practical interest of this railroad in reforestation as a supporter of traffic and prosperity and as a means of escape from the menance of idle lands. The Southern Railway, he said, is itself practicing forestry on a considerable tract originally acquired as a source of wood fuel for locomotives.

Two papers were presented on "Forestry possibilities for the hardwoods." One, by E. H. Frothingham, of

the Appalachian Forest Experiment Station, dealt with the more technical aspects of hardwoods management; the other, by John R. Thistletonwaite, of Opelousas, La., gave an account of personal experiences and the practices developed by a company that has long sought timber conservation both in its cutting operations and in its utilization practices. "We are fully convinced," said Mr. Thistletonwaite, "of the possibilities of timber growing in our region and are spending our time, money, and effort in building up the timber supply that will take care of the future needs of our sawmill operation."

"Putting pine lumbering operations on a permanent basis" was discussed by Alabama's State forester, Col. Page S. Bunker, who is confident that private enterprise will eagerly adopt improved practices as these are demonstrated to be financially advantageous to the landowner, and who specified various measures worth the lumberman's careful consideration which if adopted would mean forestry. "Forestry progress in the southern States" was hopefully reviewed by the several State foresters present in a series of brief talks.

A discussion of naval stores matters featured the afternoon of the second day, and included an address by State Senator I. J. McCall, of Jasper, Fla., on "The naval stores industry and the Florida reforestation problem." Senator McCall, speaking from life-long experience in the pine country and with conspicuous earnestness and sincerity, made clear his conviction that conservative practices will pay good returns if properly applied and gave an illuminating recital of his own observations and experiments as a pineland owner and naval stores operator. The importance of fire control he regarded as beyond question. "The relation of the naval stores factor to the operator and to reforestation" was discussed by H. W. Wilson, of Jacksonville, and the research activities of the Forest Service in the field of naval stores production were outlined by Lenthall Wyman, of the Southern Forest Experiment Station.

The evening of the first day was devoted to a banquet, presided over by B. F. Williamson. H. N. Wheeler, of the United States Forest Service, gave a rapid-fire illustrated address on the need for forest conservation. Roy L. Hogue, State forester of Mississippi, followed with entertaining personal reminiscences of a European forestry trip last summer. Assistant Forester Will C. Barnes, of the United States Forest Service, closed the program with a delightful talk on "The romance of the grass lands" from an old western stockman's standpoint. He also pointed out the 50 per cent decline in the cattle industry in Florida within recent years and urged the owners of forest lands to utilize cattle grazing for fire protection and to offset carrying charges while young timber is growing.

The indoor sessions of the congress were followed by a field day for those who could stay over to inspect the work in naval stores research that is being conducted

at Starke, Fla., by the Southern Forest Experiment Station.

Louisville, Ky., was chosen as the place of meeting for the 1928 session. The election of officers for the coming year resulted as follows: President, Tom Wallace, Louisville, Ky.; vice president, Senator Duncan U. Fletcher of Florida; chairman of the executive committee, W. D. Taylor, Dante, Va. (reelected); secretary-treasurer, E. O. Siecke, State forester of Texas (reelected).

Fire Loss in the Southern States

Forest fires of the year 1925 burned over 22,000,000 acres of forest land in the nine southern States, according to estimates given to the Southern Forest Experiment Station by the State foresters of the South. This is more than four times as much forest land as is known to have been covered by fires of that year in all the other States of the Union combined. However, it represents a decrease of 35 per cent from the area burned over in the South in 1914. The decrease is attributable both to more favorable fire weather and to the development of fire protection work.

The Wood Industries of New England

By WARREN D. BRUSH, U. S. Forest Service

Changing economic conditions in the United States are profoundly affecting wood utilization in New England.

Probably the most important factor is the development and expansion of the Pacific coast lumber industry. Western pine and Douglas fir, which are available in large clear sizes, are being delivered to New England via the Panama Canal in competition with home-grown timber. This has resulted in a large falling off in demand for native softwoods for building purposes. Another factor is the slump in the wooden-box industry. The rapid progress in the development of the fiber container, particularly in increasing its strength, is mainly responsible. The plywood box, made very largely of hardwood veneer, has also contributed to the decline of the pine box. Some large New England box factories formerly using softwoods have gone to considerable expense in buying equipment in order to change to the manufacture of plywood boxes.

The movement of the cotton-weaving industry to the South has had a marked effect on New England factories making bobbins of local birch, maple, and beech for cotton weaving, and a number of the large bobbin and shuttle plants are now idle. New England has always been the stronghold of the thread industry, which requires a very large quantity of "spool wood," largely paper birch. Although the thread manufactured in New England in 1923 was worth 54 times as

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much as that manufactured in the cotton-producing States, nevertheless from 1919 to 1923 the value of thread manufactured had decreased 5 per cent in New England and increased 100 per cent in the cotton States. For the entire United States the value was practically the same for 1923 as for 1919. Whether the spool industry will be taken from New England depends largely on whether suitable wood for this use can be obtained in the South.

In contrast with the large falling off in the demand for bobbins and shuttles, there is great promise for New England in the production of other turned articles from hardwoods. Many factories are shifting from spool manufacture to the production of turned novelties such as handles of various kinds and the myriad of turned wooden articles to be found in the 5-and-10-cent stores. Such articles are produced from squares cut to standard dimensions.

Furniture factories in New England, particularly chair factories, use large amounts of local hardwoods as round-edge lumber, edged lumber, and dimension squares. While the quantity of dimension stock used by such factories is small compared with the quantity of round-edge lumber they consume, it seems probable that it will increase considerably. Studies by the Forest Products Laboratory have shown that in the manufacture of furniture, at least in many cases, the use of dimension squares is more economical than the use of round-edge lumber.

A large increase in the use of the hardwoods of New England seems assured through the manufacture of dimension stock. The general adoption of dimension stock, standardized both as to sizes and as to grades, would greatly encourage its use and bring greater profit to the hardwood industry.

Federal Forest Protection Board Organized

The heads of the bureaus responsible for the administration of Federal forest lands have been organized into the Federal Forest Protection Board, by an order issued by the Chief Coordinator, under the Bureau of the Budget. The board is headed by W. B. Greeley, chief of the Forest Service, and includes the chief of the Weather Bureau, the director of the National Park Service, the Commissioner of Indian Affairs, and the Commissioner of the General Land Office. At a series of meetings held on and since January 26 the board has considered "general policies and plans for the protection of the forests of the country, especially in the prevention and suppression of forest fires, embracing measures for the cooperation of Federal, State, and private agencies."

Low Temperatures Kill Western Pine Beetle

The effect of low temperatures on the western pine beetle was tested this winter by the Bureau of Entomology at the laboratory at Leland Stanford University, California, with a specially constructed ap-

paratus in which temperatures as low as 24 °F. below zero can be maintained. Results indicate that the western pine beetle can not at any stage survive a bark temperature of -15° F. Mortality sets in at between 0° and -10°, and a very high percentage of the brood is killed by a brief exposure at the latter point. Predators and secondary insects showed different degrees of resistance to the low temperatures, and parasites were not killed at all even at -24° F.

Field checks indicate that the bark of standing infested trees retains a certain amount of its heat when the air temperature falls, and that the air temperature must fall somewhat below the critical point before the insects are subjected to fatal temperatures.

Bark Beetles Destroy Timber Worth a Million

A loss of more than \$1,000,000 resulted in 1925 from bark beetle depredations in yellow pine stands of southern Oregon and northern California in which a control project of the Bureau of Entomology has been in progress since 1921. On the 1,267,000-acre area, the bureau estimates, the western pine beetle and associated insects killed during the year 274,000 yellow pines containing 252,880,000 board feet of timber. At a valuation of \$4.60 per thousand board feet, this means a loss of \$1,161,510. The 1925 loss as revealed by a survey in 1926 was greater than that estimated for any year of the period 1920-1924.



Island property of about 5,000 acres in the Mississippi River makes up the city forest of Winona, Minn. John Latsch, of Winona, has given this land to the city, piece by piece, and also gives about \$2,500 a year toward its administration. A board of five members has control of the property and V. A. Lynne is in charge as forester. Mr. Lynne operates a forest nursery, which he plans to enlarge so as to supply all the stock needed for planting the barren portions of the islands.

This city forest is included in the Upper Mississippi Wild Life Refuge.



Electric power plants fed with sawdust, shavings, hogged waste, and bark at the three principal mills of the Dierks Lumber & Coal Co. supply power not only for the company's own operations but for outside distribution. The three plants, which are situated at Dierks, Ark., and at Broken Bow and Wright City, Okla., supply approximately 450,000 kilowatt-hours a month to neighboring towns. They serve nearly a score of communities, many of which before this service was developed in the last three years were without electricity. The three mill power houses are joined together by a 33,000-volt transmission line.

Foreign Notes

Canadian Fire Record for 1926

"In eastern Canada," says the Canadian Department of the Interior, "both the spring and fall of 1926 were cool and rainy so that new low records for forest fire losses were established. A midsummer period of fire hazard occurred in the East generally but it passed without any great damage being done. In western Canada, 1926 closely followed the two previous years, both in the intensity of the hazard and in the fire losses. Danger conditions continued, generally, throughout the season and the scant precipitation afforded little relief from early spring to late fall.

"According to figures prepared in the forest service of the Department of the Interior, there were 5,529 forest fires in Canada last year which burned over a total area of 1,824,015 acres. The total gross damage and loss is estimated at \$7,468,343."

In Nova Scotia and New Brunswick the spring was wet and late and the fire hazard was low until July. Conditions were threatening until the latter part of August when heavy rains occurred. In Nova Scotia a total of 177 fires was reported but these burned only 442 acres of merchantable timber, 249 acres of young growth, and 222 acres of slash. The total area burned over was 3,181 acres. In New Brunswick 65 fires burned over 12,347 acres of which 93 per cent carried merchantable timber.

Losses in Quebec and Ontario were the lowest ever recorded there. In Ontario 1,110 forest fires covered an area of 88,374 acres, including 12,734 acres of mature timber and 28,886 acres of young growth. Although 20,000,000 acres was added to the fire district during the year owing to mining and pulp operations, the area burned over was less than half that of the year 1925. Moist weather combined with the strengthening of the forestry organization in keeping down the fire score. New district headquarters were opened at Sioux Lookout, and some 50 new mechanical units and several motor trucks were put into use.

In some ways the Prairie Provinces experienced the worst season in recent years both in point of the intensity of the fire hazard and in the losses suffered. In Manitoba 463 forest fires swept 55,000 acres, including about 8,182 acres of merchantable timber and 13,500 acres of young growth. In Saskatchewan the fire season was the most destructive since 1919, and was exceptional in that fires continued at frequent intervals throughout the summer instead of being concentrated in the usually well-marked spring and fall seasons. The numbers of lightning and incendiary fires were large, but settlers' fires caused the greatest loss. Of the 221 fires reported 121 were in or border-

ing on forest reserves but only 2 per cent of the total damage occurred on the reserves. The aggregate area of all fires reached about 550,000 acres, of which three-fifths was occupied by merchantable timber and one-fifth by young growth. In Alberta a long fire season characterized by marked extremes resulted in 279 fires, of which 26 occurred on Dominion forest reserves. Of this total 116 were detected and extinguished in the incipient stage and 90 more were suppressed before covering 10 acres. The total area burned over was 207,000 acres, including 37,000 acres of merchantable timber and 100,000 acres of young growth.

In British Columbia the unusually light snowfall of the winter of 1925-26 left the timber areas dry in April, and very little rainfall occurred during the succeeding six months. On the Dominion lands in the Railway Belt the season was the most disastrous yet experienced, 469 fires occurring. Only 35 per cent of these covered areas of 10 acres or more, and the total area fireswept was 198,995 acres. The main losses were in the difficult southern interior region. Lightning caused 25 per cent of the fires. Five hundred million board feet of merchantable timber was damaged or destroyed, and an area of 200,000 acres of young growth was fireswept.

A Commercial Planting in New Zealand

The New Zealand Perpetual Forests Co. in the past two years has planted Monterey pine on 54,655 acres of the North Island. Prof. Hugh Corbin, reporting in the Empire Forestry Journal on an inspection made, in August, 1926, says "Since October, 1925, the company has raised 26,000,000 seedlings of *Pinus insignis (radiata)* for planting on its areas. In addition to these about 2,000,000 seedlings have been raised for the purpose of lining out so that 2-year-old plants may be obtainable for certain localities and places in which stronger trees are more suitable than seedlings. Further, some 2,000,000 seedlings were obtained from Rotorua. The bulk of this gigantic task has fallen on the shoulders of Basil Goudie, M. Sc., who has been in charge of the tree-raising section for several years. It is quite clear that the responsibility of raising successfully so large a number of trees is a very great one because any failure, either on account of bad seed or anything else, would mean that the program of planting in a given season would be an impossibility. * * * The seeds are obtained from trees which have been examined and passed as good parent trees. The cones are bagged up and brought to the forest nursery at Putaruru, they are then kiln dried and the seeds extracted and cleaned. That there is no dearth of seeds

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in New Zealand at the present time is indicated by an offer recently received for the supply of as much as 6 tons of *Pinus radiata* seed."

Next season a number of other conifers are to be raised in the nurseries in order that plantations may be made of them later on. Seeds of the following species are being sown: *P. ponderosa*, *Pseudotsuga taxifolia*, *P. strobus*, and *P. pinaster*.

The New Zealand Perpetual Forests Co.'s project is being financed largely through the sale of debenture bonds. A consular report states that by September, 1926, the subscriptions for bonds amounted to nearly two million pounds sterling. One-third of the proceeds from bond sales is put into trustee reserve funds invested chiefly in Government securities and first mortgages. The company covenants to plant in the year subsequent to purchase of bonds an acreage at least equivalent to the number of bonds sold up to November 1. The bonds are each for 25 pounds sterling. To November, 1924, 6,432 bonds were sold and in 1925, 9,733 acres were planted. In the 12 months ended November 1, 1925, a further 35,763 bonds were sold and 44,922 acres were planted in 1926.

Oak Forests Dusted with Arsenic by Airplane

Some 3,500 acres of oak forest in the Oberforsteri Haste, near Minden, Germany, in the spring of 1926 were dusted with calcium arsenate by the use of an airplane, in an effort to combat the "eichenwickler." As a result the woods were almost cleared of the insects in a comparatively short time. However, severe losses resulted among game animals, despite the fact that the dusting was followed by a spell of rainy weather. Deer, rabbits, and birds fell victims to the poison. Great numbers of bees, also, were killed, and a number of domestic animals were affected. It is felt by members of the staff of the Chemische Institut der Tierarztlichen Hochschule at Hannover that the losses to wild life, the possible loss of domestic stock, and the threat to man who might eat mushrooms and berries gathered in the forest, is sufficient justification for discontinuing the practice, although in other locations similar losses were not noted after dusting with arsenic from an airplane.



An organization styled "The Society of Foresters of Great Britain" has been formed "to advance in Great Britain a knowledge of technical forestry in all its aspects." Professional membership is confined to residents of Great Britain who are devoting full time to forestry or some branch of natural science connected with forestry. Officers of the society are: R. L. Robinson, president; Prof. R. S. Troup, vice president; Dr. H. M. Steven, editor; and R. Angus Galloway, 8 Rutland Square, Edinburgh, secretary.

Frank J. D. Barnjum, of Nova Scotia, is repeating in 1927 his last year's offer of cash prizes to chief forest rangers of the Province for fire-prevention work. The three rangers making the best showing will receive awards totaling \$1,000.



The Forest Association of Sweden, the Skogssällskapet, has received from Mr. Edwin Ohlsson, one of its founders, a gift of forests and sawmills valued at about \$500,000.



The airplanes of the Royal Canadian Air Force, which during the forest-fire season patrol practically the whole of Manitoba's accessible forested area, are fitted with radio equipment. Messages giving size and location of fires, the position of the craft, and the condition of the engine are transmitted both by voice and by the Morse code. Voice messages have a range of from 5 to 90 miles, and those sent by the Morse code are picked up at distances of from 150 to 175 miles. As yet no arrangements have been made for communications by radio from the ground to the planes.



German payments to France under the Dawes plan in 1926 included timber valued at 18,000,000 gold marks. This was the first year in which France had cared to receive payment in commodities other than coal, coke, and chemical products. In the first two months of the 1927 year (beginning September 1, 1926) payments in timber were valued at 4,500,000 marks.



Only 90 acres of woodland were burned over during the 1926 fire season on the 16,000 square miles of territory covered by the operations of the St. Maurice Forest Protective Association, Quebec. Not a single fire was started by a colonist. The association owns 80 observation towers and has put up 1,600 miles of telephone wires.



The forestry department of the University of Toronto has 51 students registered this year, including 9 from countries other than Canada. Of these, 3 are from England, 2 from the United States, and 1 each from Finland, Holland, Norway, and Trinidad.



Revenues from State forestry operations of Finland last year amounted to 252,278,669 marks, according to preliminary calculations of the Finnish Forestry Board, making the net profit from these operations 136,442,769 marks.

Persons

Charles Sprague Sargent

Charles Sprague Sargent, director of the Arnold Arboretum and Arnold professor of arboriculture at Harvard University, died at Brookline, Mass., March 22, 1927.

Professor Sargent was for many years the foremost arboriculturist in America and was the author of many works on trees, among which the most important are *Silva of North America*, a Manual of the Trees of North America, a Catalogue of the Forest Trees of North America, *The Woods of the United States*, and *The Forest Flora of Japan*. He planned the Jessup collection of North American woods for the Museum of Natural History at New York and was for 10 years editor of *Garden and Forest*. He also took a prominent part in the development of public forestry in this country, acting as chairman of the Commission for the Preservation of the Adirondack Forests in 1885 and of the commission appointed by the National Academy of Sciences in 1896-97 to formulate a forest policy for the United States. He leaves two enduring monuments, both of the kind most ardently desired by the noblest minds—the great works on North American sylva in constant use by foresters and tree lovers all over the world and that glorious and useful living monument the Arnold Arboretum.

George Bishop Sudworth

George Bishop Sudworth, chief dendrologist of the United States Forest Service, died at his home in Chevy Chase, D. C., on May 10 after a very brief illness.

Mr. Sudworth was the dean of American foresters, his connection with the forestry work of the Federal Government dating from 1886. His preparation included a long period of university work in scientific studies ranging from dendrology and ornithology to medicine. In nearly 50 years of exploration and study, to which he brought remarkable powers of observation and memory, he built up a vast store of precise knowledge of the forest species and forest conditions of the United States. His many works on systematic dendrology include *Forest Trees of the Pacific Slope*, *Cypress and Juniper Trees of the Rocky Mountain Region*, *Pine Trees of the Rocky Mountain Region*, and the widely known *Check List of the Forest Trees of the United States, their Names and Ranges*, just now issued in revised form. With these may be mentioned his preparation of an extensive series of range maps of individual forest trees. Mr. Sudworth discovered and named a number of new species and varieties of American trees, and collected a very

extensive herbarium. In 1900 he took a leading part in founding the Society of American Foresters. He contributed in an important way to the improvement of nursery practice, wood identification, basket-willow culture, and the introduction of exotics. He was keenly interested in arboreta, and directed the development of the Letchworth Park Forest and Arboretum, in Wyoming County, N. Y. He was an advisor to the War Department in the use and care of trees, and was frequently consulted by city authorities as an expert in shade-tree work. He took great interest in the Boy Scout movement and contributed the section on tree identification to the Boy Scout Manual. For the last 15 years he served on the Federal Horticultural Board, participating in important decisions regulating the importation and interstate shipment of plants and bulbs for the purpose of checking the spread of insect pests and plant diseases.

The Conservation and Development Commission of Virginia, which recently replaced the State's geological commission, has the following membership: William E. Carson, Riverton, chairman; Coleman Wortham, Richmond; Junius P. Fishburn, Roanoke; E. Griffith Dodson, Norfolk; Rufus Roberts, Culpeper; Thomas L. Farrar, Charlottesville; and Lee Long, Dante.

The personnel of the newly created Board of Conservation and Development of North Carolina is as follows: E. S. Askew, Merry Hill; F. S. Worthy, Washington; R. Bruce Etheridge, Manteo; Santford Martin, Winston-Salem; J. S. Gilkey, Marion; George L. Hampton, Canton; Frank H. Stedman, Fayetteville; Jas. G. K. McClure, jr., Asheville; H. L. McLaren, Charlotte; S. Wade Marr, Raleigh; Fred I. Sutton, Kinston; and E. C. Cranford, Asheboro.

Joseph S. Illick has been appointed State forester of Pennsylvania and deputy secretary of the State department of forests and waters. Mr. Illick has served in the forestry department of Pennsylvania for nearly 20 years, from 1907 to 1919 as a member of the faculty of the State forest school at Mont Alto and since the latter date as chief of forest information and director of forest research.

Don Matthews, forester for the Tropical Plant Research Foundation, has gone to Cuba on a two-year leave of absence to take charge of a reforestation project of the United Fruit Co. In preparation for reforestation work on the company's upland holdings in eastern Cuba, he plans to establish a forest nursery at Banes for the propagation of fast-growing tree species.

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Newly appointed members of the Appalachian Forest Research Council are Verne Rhoades, consulting forester, Asheville, N. C., and Paul R. Camp, president of the Camp Manufacturing Co., Franklin, Va. Members reappointed to the council are A. B. Brooks, chief game protector of West Virginia; Dr. William H. Hutchins, president of Berea College, Berea, Ky.; John Raine, president of the Meadow River Lumber Co., Rainelle, W. Va.; Chapin Jones, State forester of Virginia; S. F. Horn, editor of the Southern Lumberman, Nashville, Tenn.; and Thomas H. Clagett, chief engineer of the Pocahontas Coal & Coke Co., Bluefield, W. Va.

A. M. Koroleff has left the Portland district office of the United States Forest Service to become secretary of the woodlands section of the Canadian Pulp and Paper Association.

E. H. Thomson, president of the Federal Land Bank of Springfield, Mass., and B. S. Viles, of Augusta, Me., were recently appointed to the Northeastern Forest Research Council.

Earl W. Loveridge has joined the Washington staff of the United States Forest Service as forest inspector in the branch of operation, taking the place left vacant by the transfer of Joseph C. Kircher to the branch of forest management. Mr. Loveridge has been a member of the Forest Service since 1913, his latest post having been that of forest inspector in the southwestern district. His successor in that position is Stanley F. Wilson, formerly supervisor of the Carson National Forest. The new supervisor of the Carson Forest is C. R. Dwire, formerly assistant supervisor.

Dr. Heinrich Hesselman, director of the Swedish Forest Experiment Station at Stockholm, is to be a representative of the Swedish Government at the International Soil Congress to be held in Washington, D. C., in June. Doctor Hesselman is well known both in Europe and in America for his investigations on forest soils, particularly on the relation of the soil nitrates in the humus and forest litter to the establishment and early growth of spruce. A plan to have him stay in America until late fall in order that he might demonstrate fully those methods he has so successfully employed in the study of forest soils did not materialize, although a fellowship from the International Education Board had been obtained. After visiting Washington, Doctor Hesselman intends to make a trip to the Pacific coast. Following this he plans to visit representative forest regions and forest research institutions in various parts of the country, returning to Sweden in September.

H. Friedrich Fhr. von Maltzahn, a member of the State forest service of Mecklenburg, Germany, attached to the office of forest management at Schwerin, is to arrive in the United States in May for a visit of six months. After a short visit with his cousin, the

German ambassador, Mr. Maltzahn plans to visit the forest schools of Cornell, Yale, and Harvard, and to work in their libraries. Later he intends to visit various sections of the country to see the results of forestry practice. Mr. Maltzahn is interested particularly in American trees that are being planted in Germany, including the red oak, shagbark hickory, Canadian poplar, Douglas fir, and Sitka spruce.

Kinne F. Williams, of the staff of the New York Conservation Commission, who has had charge of the Lowville nursery, was promoted in March to the position of supervisor of forest fire control work.

James E. Davis has become county forester of Chautauqua County, N. Y., being employed jointly by 60 local firms and organizations in cooperation with the State college of agriculture and the United States Department of Agriculture. Mr. Davis is a forestry graduate of Cornell University and was formerly assistant extension forester in charge of boys' and girls' work in the county.

Jay Price has succeeded to E. I. Kotok's former position as fire chief of the California National Forest District.

Charles W. Boyce, of the United States Forest Service, has been awarded a Sterling fellowship of \$2,000 for work in the Yale Forest School during the school year 1927-28. He will undertake studies in forest economics which will be credited toward the Ph. D. degree.

W. C. Lowdermilk, professor of forestry at the University of Nanking, China, has safely escaped from Nanking and has arrived with his family in California.

G. F. Rupp, who was graduated from the Yale Forest School in 1926 and is now assistant professor of forestry at the Pennsylvania State College, was chosen to assist in conducting this spring's forestry camp of the Yale Forest School and to have charge of the school's summer camp for juniors.

George S. Perry, of the State Forest School of Pennsylvania, is to teach forestry at this year's summer normal school for teachers at Hattiesburg, Miss. The two sessions of the school will begin May 30 and July 11.

W. G. Wahlenburg, who as assistant silviculturist of the Northern Rocky Mountain Forest Experiment Station has been in charge of planting research at the Savenac nursery, has gone to the Southern Forest Experiment Station to take the place left vacant by the resignation of E. W. Hadley.

H. A. Maturen, formerly assistant State forester of Alabama in charge of fire protection in the southern part of the State, has become forester to the Goodman Lumber Co., of Wisconsin.

John Foley, forester for the Pennsylvania Railroad since 1912, has been promoted to assistant to the pur-

chasing agent, in which position he will have charge of the buying of forest products and their preservative treatment. His former position is being taken by F. R. Krell.

James L. Averell, a forestry graduate of the University of California, who has spent the past year studying forestry in Sweden on a scholarship from the Scandinavian-American Foundation, soon after returning to the United States in May will join the staff of the Lake States Forest Experiment Station.

Prof. Samuel J. Record, of the Yale Forest School, this winter made a second visit to Central America. He brought back wood samples and botanical material

of 150 trees with which he was not previously acquainted, many of them from country that had not before been visited by collectors.

Prof. Walter Tupper, of the botanical department of the University of Michigan, and Dr. R. Kanehira, director of the Government Research Institute of the Department of Forestry, Formosa, Japan, are each spending two months this spring in the Yale tropical laboratory.

Lawrence C. Merriam has been placed in charge of a branch office newly opened in San Francisco by Mason & Stevens, consulting forest engineers.

Bibliography

Revision of Sudworth's Check List

There are 862 species of forest trees in this country, according to the recently revised "Check List of the Forest Trees of the United States," by the late George B. Sudworth, dendrologist of the United States Forest Service. If the different varieties and hybrids are added, the total of the different forms of forest trees reaches 1,177. Of all the trees that make up our forests, 182 species are of special interest because of the commercially useful timber or other products they supply.

The previous check list, compiled 28 years ago, listed but 604 different forest tree species, varieties, and hybrids. The enormous increase in the number is due partly to the addition of newly discovered native and naturalized trees and partly to the separation of tree species that previously were not distinguished from each other.

It has long been the endeavor of the Forest Service to standardize the common names of trees and to have the standard common name of each species applied uniformly to the living tree and the timber cut from it. Such standardization of common names is particularly important in trade relations. In the new edition of the check list each of the different trees is designated by its proper technical name and by the common name adopted by the Forest Service. There is given also for each tree a list of all common names known to be applied to it in different parts of its range. A list of the common names used by the Forest Service in designating the commercial woods of our markets and the trees from which they are cut is accompanied by the names applied to them by the trade.

Copies of this publication, Miscellaneous Circular 92 of the United States Department of Agriculture, may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., at 40 cents a copy.

Forest Fires in Idaho

The importance of forest fire protection to a State two-fifths of whose area is forested and whose forest industries are its most important manufacturing enterprise is the subject of "Forest Fires in Idaho," a bulletin published under the provisions of section 1 of the Clarke-McNary Act by the Idaho State Cooperative Board of Forestry in collaboration with the United States Forest Service.

Discussing the great inflammability of Idaho forests, and the electric storms, low humidity, long dry summer periods, and strong winds prevalent in the State, the bulletin says, "Both forest and weather conditions make fire protection a very difficult job in the Idaho woods, yet the factors which have had perhaps the greatest influence upon forest destruction, particularly on private lands, are within human control."

A splendid foundation for an adequate fire-protection organization in the State is seen in the voluntary timber protective associations which have been operating for 20 years and which are left intact by the forestry law of 1925. These associations have not, however, succeeded in enlisting united support from forest land owners; in fact, a number of the associations have been patrolling practically half of the forest land within their territories free of charge. And here, it is pointed out, "the present status of the * * * situation * * * is not so disquieting as the trend. Timberland owners have been paying for forest protection even on cut-over lands and have been patrolling a great deal of the noncontributing land, principally in order to protect their standing timber and logging improvements. When any timber owner is completely cut out or any separate region completely logged off, this incentive is removed and there is much danger that immense areas of cut-over land will be abandoned." The State forestry law, which became operative in March, 1925, is cited as appearing to be an

excellent start toward solving the State's forest fire problem. This law requires every owner of forest land to protect it from fire, through an agency if he lives more than a mile away from the land; directs that logging slash be piled and burned or handled in some other manner approved by the State forester; provides for regulation of brush burning through a system of permits; makes deliberate and malicious setting of fire a felony; and enjoins fire-prevention practices on operators of engines, railroads, campers, and smokers. The effective enforcement of this law demands the support of an understanding and cooperative public; if Idaho's forest land is to be kept productive, the bulletin says, it must be through a full realization on the part of the State's citizens of the need for keeping it so. And the belief is expressed that with reasonable help from the State and the Federal Government "the private owner will see possibilities of reward for growing timber and will do his share in taking proper care of the land."

The Chemistry of Wood

By EDGAR F. WHITE, U. S. Forest Service

The Chemistry of Wood, by L. F. Hawley and Louis E. Wise, attempts to review in a single volume the purely scientific aspects of the chemistry of wood. Its material is presented under the following headings: (1) Chemical components of wood; (2) proximate and summative analyses of wood; (3) decomposition of wood; and (4) wood as an industrial material.

Most industrial and research chemists have heretofore dealt with wood in its entirety; but in this book the authors have stressed the chemistry of the botanical elements of wood—the phase of the subject that is most interesting to the forester, the botanist, and the wood technologist.

Although the forester may find the reading somewhat difficult in places, he will not fail to grasp the possibilities of chemical research on wood as here presented. The book will help him to realize more clearly the aid that chemistry offers in arriving at an understanding of the life processes of trees, in devising new methods of protecting forests from fire, insects, and disease, and in modifying and extending the usefulness and value of lumber and other forest products.

The book is a publication of the Chemical Catalogue Co. (Inc.), New York.



Recent Books and Pamphlets

Burns, G. P.: Studies in tolerance of New England forest trees: 5. Relation of the moisture content of the soil to the sensitiveness of the chloroplast to light. 16 pp. illus. (Vermont Agricultural Experiment Station bulletin 257.) Burlington, Vt., 1926.

Cunningham, R. N., and others: Montana forest and timber handbook. 162 pp. illus., diagrs. (State University of Montana studies no. 1.) Missoula, Mont., 1926.

Herrick, G. W., and Tanaka, T.: The spruce gallaphid. 17 pp. illus. (Cornell University Agricultural Experiment Station bulletin 454.) Ithaca, N. Y., 1926.

Hoyle, R. J.: The manufacture and use of small dimension. 94 pp. illus. (New York State College of Forestry Technical Publication no. 20.) Syracuse, N. Y., 1927.

Ludwig, F. H.: The retail lumber dealer and how he functions. 22 pp. (Yale Forest School lumber industry series no. 7.) New Haven, Conn., 1927.

New York State College of Forestry: Papers presented at the forest protection conference, Nov. 10-12, 1926. 77 pp. illus., diagrs. Syracuse, N. Y., 1927.

Priest, G. H.: Naval stores: production, consumption, and distribution. 39 pp. (U. S. Department of Commerce, Bureau of Foreign and Domestic Commerce, trade information bulletin no. 454.) Washington, D. C., 1927.

Rehder, A.: Manual of cultivated trees and shrubs hardy in North America. 930 pp. The Macmillan Co., New York, 1927.

Articles in Periodicals

Bulletin of the Pan American Union, March, 1927.—Tropical hardwoods, with special reference to their uses in American industries, by G. P. Ahern, pp. 219-227.

Indian Forester, March, 1927.—A resume of forest products research in the British Empire during 1923-1926, by R. S. Pearson, pp. 141-150.

Journal of Forestry, February, 1927.—Better seeds, better trees, by C. G. Bates, pp. 130-144. March, 1927.—The next generation, by R. D. Forbes, pp. 260-280.—A chapter in American forestry history, by A. F. Hawes, pp. 325-337.

Scientific Monthly, January, 1927.—Our American forests: their past, present, and future, by R. J. Pool, pp. 74-80.

University of Washington Forest Club Quarterly, November, 1926.—The marine borer problem on the Pacific coast, by R. C. Miller, pp. 5-11.

Recent Publications of the Forest Service

Miscellaneous Circular 79, Forest Fire Prevention Handbook for School Children of California.

Miscellaneous Circular 94, National Forests of California.

Yearbook Separate 847, How the Public Forests are Handled (reprint).

Map Folder, Umatilla National Forest (North Half).

National Forest Administrative Maps: $\frac{1}{4}$ -inch, Challis, Prescott, Santa Fe, and Shenandoah; $\frac{3}{8}$ -inch, Unaka; $\frac{1}{2}$ inch, Challis, Fremont, Montezuma, Mount Hood, and Shenandoah.

The annual programs of the Lake States, Appalachian, and Northeastern Forest Experiment Stations for the year 1927 have been multigraphed and are available for distribution. Requests should be addressed to the respective stations.